

**Meaningful Skill Acquisition Through Frivolous Computer Gaming:**  
What Gamers Think

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## **Preface**

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### Abstract

*Can frivolous gaming be good for more than mindless entertainment? Some proponents claim that “gaming is good for the soul” and can lead to the acquisition of really useful skills. But what do the gamers themselves think? Five avid gamers were interviewed about their own sense of meaningful skill acquisition through playing World of Warcraft in their spare time. They shared both what skills they felt they acquired through their gaming, and which of those were useful to them in real life. The findings and some of their consequences are discussed.*

### Introduction

In the beginning, the computer was a simple machine, and the first computer games were simple games. My first encounter with a computer game involved four bright grey squares on a dark grey background, lined vertically at the left-hand edge of the screen with some space between them. The squares would move towards the right of the screen at varying and dissimilar speeds, until eventually one of them reached the edge first. The game developer named this program “Horses”, and allowed the gamer to start the action by guessing which square would reach the edge first. Some decades later, as well as a few leaps and bounds in the development of computer technology, the games look, sound, feel and play quite differently. Today, you can play games that simulate horseback-riding nearly to a fault, riding around in a beautifully rendered autumn landscape on a lavishly detailed horse that looks, sounds and behaves much like the real thing.

Throughout this development, the computer games have acquired many roles in society. Some of these roles are positive, making games an important part of people’s lives. On the most basic level, they provide entertainment. They have also become important for the economy: There are jobs and revenues all along the chain, from producers and developers, through publishers, and right down to the distribution outlets. Friends and families use games as social activities, as a way of bonding. Every third parent plays computer games, and four out of five of those co-play with their children.

When asked, approximately three out of four of those say it is because “it’s fun for the whole family” or “it’s a good opportunity to socialize with the child” (ESA, 2006). In the shape of simulators, computer games are used to help understand certain parts of our world, and to train professionals like pilots and surgeons. So called “edutainment” products, i.e. games that are designed specifically for educational purposes, are used as instructional tools for children and older students. It has been pointed out that games have also been successfully used in therapy, to train hand-eye-coordination, and to test and diagnose other phenomena (Dill & Dill, 1998). Of course, political messages are communicated through games, and companies are advertising for various consumer products in computer games as well. In addition to these apparently positive roles, there are other, more negative aspects that have typically been given more (or maybe just louder) voice. Computer games have long been seen as mindless entertainment, distracting people from more constructive behavior. They have been known to isolate gamers from other people. Some parents use games to occupy their children, turning them into convenient babysitters while the grown-ups go about their grown-up business. In this way, the children are deprived of human contact and other forms of physically and mentally stimulating play. Ominously, violent games have been shown to lead to more aggressive behavior in the gamer (C. A. Anderson, 2004), and computer games have been tried linked to several of the latest mass murder tragedies (Bradley, 2005). Good or bad, most people have some kind of relationship with these games, having played themselves, having friends or family that play regularly, or having some kind of opinion about them derived through media coverage, advertisement or conversation. The fact of the matter is, computer games constitute such a blossoming industry that in the US it has become common to compare it to the movie industry in yearly revenue. According to US statistics, \$7 billion are generated every year (ESA, 2006). The same source provides statistics that 69% of heads of households play, and the average gamer is aged 33 years old. As much as 25% are over 50 years of age, and 38% are women. This is hardly an activity just for young boys, as it may have been once upon a time.

Statistics aside, computer games are still a young enough phenomenon that they have not yet had the opportunity to be subjected to a great amount of research. And most of what has been done has had one of two approaches: Either the focus has been on trying

to ascertain whether some negative effect or other (e.g. aggressive behavior) follows from gaming (Dill & Dill, 1998; Sherry, 2001), or it has been on exploring the potential for using games as tools to accomplish some effect (e.g. education). In the latter case, the games have been removed from their natural setting and entered into an artificial one, in that the primary purpose is no longer entertainment (Amory, Naicker, Vincent, & Adams, 1999; Barab, Thomas, Dodge, Carteaux, & Hakan, 2005; Squire, 2004). Barab et.al's "Quest Atlantis" is an example of how computer programs designed specifically with education in mind can harness the motivational powers of a computer game for educational ends. The children that participated in their study reported a higher level of helping, learning and playing (i.e. a higher level of those three factors combined) when engaging in Quest Atlantis, than in any other activity. They felt like they were learning as much as they were in school, and they had more fun with it. Another project, called "Games-to-Teach", explored using games intended for entertainment in a classroom setting (Squire, 2004). The historical civilization simulator "Civilization III" was tested in this way, and it was noted that the students acquired a new approach to problem solving: learning from history. It was also discovered that using games in this way worked really well for students who did not fare well within the traditional educational doctrine (Squire, 2005). On the other hand, for students already successful in school, playing the game led to a degree of frustration. This was assumed to be the result of a reluctance to accept it as a legitimate learning tool, an observation that hints at another issue with using games for education: Not all games, game types, or even games at all, for that matter, appeal equally to all kinds of people. Conceptually, in order to be able to learn through gaming (or even play at all), the gamer must enjoy the game on some level. Also, some game elements are theorized to be better suited for learning than others (Amory, Naicker, Vincent, & Adams, 1999), and different people respond differently to different elements (Malone & Lepper, 1987). Another observation by Squire (2004) was that much of the learning was done socially, e.g. through consulting peers and teachers about strategy. So even though Civilization III was played in single-player mode, a lot of how the students could benefit from this novel type of learning situation was through the established learning medium of social interaction. As has been pointed out by others (Gee, 2003), gaming does not take place in a cultural vacuum: what happens in a game,

how it is experienced, and how it can be played and mastered, are all topics of conversation between gamers. This has an impact on what a gamer can take away with her from a gaming experience. Apart from the fact that some knowledge and skills are directly related to social interaction (e.g. some of those related to working with others, or to communication), there are learning mechanisms that hinge on social interaction, (e.g. Bandura's Social Learning Theory, 1977), and culture can also influence what is focused on in an environment where numerous impressions compete for attention.

Perhaps constituting the epitome of social interaction within the confines of computer games, massively multiplayer online games (MMOGs) is quickly gaining prominence in the world of gaming. Successful MMOGs are immensely profitable to their producers, and literally millions of people play one of the most successful ones (Fahey, 2005). This is a vast group of users, many of them interacting in the same game space at the same time. That may mean that different mechanisms and dynamics are involved from ordinary games, both in general and for learning and skill acquisition. In a study conducted on a multiplayer game designed for use in math class (Magnussen & Misfeldt, 2004), an unexpected occurrence gave rise to a related assertion. The surprising turn of events in this study occurred when one specific team of 10-year old girls transformed the game play in such a way that the educational content was mostly ignored, while still managing to top the high score lists. A part of the conclusion was that the transformation the girls were responsible for was one that turned the game activity into one of real, active team work, whereas the team work in the original game activity was of a more passive nature. The game probably became more fun to play (at the very least for those specific girls), and also allowed for increased social interaction. This type of transformation, or "mangle of play" occurs naturally, especially in a multiplayer environment (Steinkuehler, 2006). It appears to be a beneficial sort of transformation, in that the resulting increase in social interaction facilitates social learning, which has been found to be a primary learning mechanism in MMOGs (Steinkuehler, 2004). If this occurrence can be generalized, most any MMOG can be transformed into a good learning environment. But as the researchers point out: there lies a challenge in accomplishing the most beneficial social structures. In the Magnussen and Misfeldt study, only one group transformed the game play at all. Had any others done so, there is no guarantee it would

be towards anything resembling a useful social structure. It is also conceivable that the social interaction and social learning facilitated in MMOGs are interfering with other mechanisms and dynamics that might be more conducive to learning.

A much less common approach in the field of computer games research is examining the positive effects of casual gaming. It is an apparent fact that only a minority of the playing of computer games is done in the training-, education- and research settings. The vast majority of it is done for fun. In one of the research forays into this phenomenon, an online cognitive ethnographic study was conducted on the MMOG “Lineage” (Steinkuehler, 2005). The researcher spent two years actively playing the game and amassing field notes. Observations were subjected to Discourse analysis (Gee, 1999), which takes into account verbal (or written), social and material practices. The research findings suggested that social learning functions as a primary mechanism for learning in Lineage. The less experienced gamer is commonly coached by the more experienced ones. There is reason to believe that this is also true for other MMOGs, in particular those that allow for easy communication (e.g. a chat window). But what other learning mechanisms are facilitated in games, and what can be learned?

In one ambitious attempt at academically theorizing about these things, a number of points were made (Gee, 2003, 2005). One important thing to realize about computer games is that they must be successful learning machines in order to be commercial successes. If a game fails at making the gamers better at the activities it requires of them, it will seem too difficult and frustrating. Very few will want to play such a game, and so very few will want to buy it. Therefore, in the competitive world of computer game production, it is a “do or die” for developers to make games that are good at facilitating learning. This fact alone makes computer games pleasurable, according to Gee, since the need for learning is a major part of the human being. When we are challenged to learn how to play a game, we experience a satisfaction in the learning activity itself. It also seems clear that in possessing this quality, games become likely mediums for acquiring both knowledge and skills.

Games typically allow us to experience emotions, through our immersion in the narrative presented by the game. Feelings and emotion have been shown to be central to learning, allowing for deeper learning than when strictly cognitive (see Ermi and Mäyrä,



2005, for a model of immersion in computer games). Typically, the gamer projects into the avatar of a given game, and then shares that avatar's experiences. The story unfolding becomes personal in a way, so that the gamer gains a sense of ownership of it. The memory of it is thus entrenched in the episodic memory. Furthermore, since negative consequences of failure are "absorbed" by the avatar, the gamer is in effect embedded in a psychosocial moratorium during play, one that provides enhanced freedom to experiment and attempt things that would otherwise have been too intimidating. Also tied to the use of an avatar, is that very little input leads to monumental output: Pushing a few buttons for a while results in immense (though virtual) accomplishments like saving the world from certain doom etc.

Some games allow the gamer to play out simulations: of situations, what can happen in them, and how they can be resolved. This chance to see how things work in motion is said to be much more effective learning than the content focused memorize-recite routine traditionally used in education. Some games encourage, teach and equip the gamer to run mental simulations as well. The rehearsal effect of running mental simulations is also apparent. In a game like Full Spectrum Warrior (which was originally a simulation developed by and for the US military, before it was released commercially), the gamer is also working with teams of virtual soldiers who are all acting about as professional as the real thing. When playing through the simulations, the gamer is in (virtual) effect cooperating with these competent soldiers. It is much like having experts modeling the correct behavior, simultaneously as it allows for the sensation of being a part of this expertise. Meanwhile, one's own expertise is in reality being developed.

In a higher order simulator like Rise of Nations, the gamer is cooperating with a whole host of very different virtual professionals, from soldiers to farmers, miners, professors, drivers, pilots, builders etc. Although it is a virtual persona (under the player's control) that erects a barracks, the gamer somehow gets the sense that "I am building a barracks". Only, the sense of ownership extends far beyond that of just singular actions like that. In this type of game the gamer acquires a sense of empathy with whole systems, and learns to think on many levels both temporal and spatial. There are concerns like which types of units work well together, how these units will function at a later stage of the game when technology has advanced, where geographically buildings should be

erected for maximum usefulness etc. This type of complex, multi-dimensional thinking and planning is not unlike what professional scientists engage in. But in order for the game to be able to bring the gamer to this level of complex thinking, all balances must be in place so that the gamer experiences a gradual and alternating increase in skill and challenge, resulting in what researchers have referred to as “flow” or “optimal experience” (Bowman, 1982; Csikszentmihalyi, 1990; Ghani & Deshpande, 1994).

Gee also makes a point that many games encourage us to reflect about identities, including our own. Everyday life is saturated with our filling a number of different roles, each contributing to our multi-faceted identities. Being a husband, an employee, a voter, a parent, a teacher, a tenant, a consumer, a son etc, all in the space of one day seems imposing – and it is! Most of us take it in stride when gradually introduced to each role, but most of us also struggle at some point in life. This is particularly true if new roles are thrust upon us unexpectedly, or if we are overwhelmed by frequent changing between different roles. Changing between roles fluidly and without stress can become a skill, as can integrating different roles into one identity. Role playing games allow for the gamer to experiment with different roles, and really reflect upon all things related to identity.

The mechanisms and “learnables” that I have mentioned from Gee’s books are among between 30 and 40 that he identifies. His theoretical contribution to this field is extensive, and invites further research.

### *The Purpose of This Study*

This article describes a research project that aimed to build on Gee’s work. The focus was on the acquisition of skills through gaming, skills that are subsequently transferable to real life situations. This topic is relatively untouched in psychological literature, calling for an exploratory approach. In order to generate preliminary data to build future research on, qualitative methods were appropriate. Therefore it was chosen to converse with gamers in a semi-structured interview setting, employing an interview style referred to as “expert interview” (Flick, 2002). The goal was to examine whether gamers themselves feel like they are improving their repertoire of tools for successful day to day functioning through their gaming. By interviewing other gamers, the self-reports and

theories of Gee would be put to the test. Grounded theory was employed throughout the project, a method that is suitable when one does not know exactly what one is looking for or how to find it. All the participants were at the time of the study playing the MMORPG (MMO Role Playing Game<sup>1</sup>) World of Warcraft (WoW) more than any other game, and so it formed the backdrop for the interviews. For some research on WoW, see for example Nardi et al. for some findings on in-game collaborations and conversations, and Ducheneaut et al. for their findings on player habits, based on statistical analyses on actual avatar behavior (Ducheneaut, Yee, Nickell, & Moore, 2006a, 2006b; Nardi & Harris, 2006; Nardi, Ly, & Harris, 2007).

### *Definitions*

Some of the terms that are central to this study might not be used entirely the same way here as they have been elsewhere. The following definitions have been included to help clarify:

*“Game”*: Usually refers to a frivolous pastime engaged in for the sake of entertainment and fun, and in this article the reference is specifically to computer games. When seen in this article, “computer games”, is used the way some people use “digital games”, covering both video games and PC games. The word “gaming” is used for the activity of playing a game for fun, and “gamer” for someone who engages in gaming.

*“Skill”*: By this is meant a person’s ability to perform a specific activity with any level of competence greater than none at all. It is distinguished between “lower order” and “higher order” skills, where lower order skills means single, often physical skills. Higher order skills is used for skills that are cognitive, and some times composite, like for example strategies for thinking. Whether the skill is considered declarative or procedural knowledge (Sternberg, 2003), mental or physical, conscious or automatic, is not taken into account. Nor is it distinguished between whether the acquisition of the skill was through some training procedure intentionally incorporated in the game or through accidental trial and error that the game creators (or anyone else) did not anticipate. This

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<sup>1</sup> Role playing games involve the player controlling a persistent character in a storyline, developing the traits and personality of the character parallel to the storyline.

means that when compared to some conventions elsewhere, the term is defined somewhat liberally.

*“Transferable skills”*: This term has been used for skills that are acquired in one specific setting, usually educational or professional, but is more general in its applicability. For example, skills with word processors acquired through typing up research articles can also be used for editing a local newspaper. Just like skill acquisition through gaming, the idea of transferable skills has not yet generated a great deal of research. However, it has caught on among educational and governmental institutions, for example in Great Britain (DfES, 2005).

*“Acquire”*: This term might inherently suggest moving between the two states of not having a skill and having a skill. Here, it is instead used to denote motion along a scale, where not having the skill is at the beginning and being perfect at it is at the end. This way of thinking is inspired by Dreyfus’ model of skill acquisition (Dreyfus and Dreyfus, 1986). Theirs is actually a stage model, with five distinct and progressive stages of skill mastery: novice, advanced beginner, competent, proficient and expert.

When the term is used here, though, it encompasses both of movement between such stages and movement within each stage (e.g. going from just having become competent with a word processor to being just shy of becoming proficient).

### *Research Questions*

It was expected that some of Gee’s observed skills (Gee, 2003, 2005) would also be reported by the interviewees in this project. Since Gee did not write about MMOGs in his studies, it was also anticipated that a new set of skills would emerge, specifically those that are dependent on or used in interaction with other human beings. The research questions were formulated like this:

*1 - What skills are acquired through MMO gaming?*

*2 – To what extent are skills acquired through MMO gaming transferable to real life?*

## Method

### *Participants*

The interviewee group consisted of five adult males, ages ranging from 23 to 35 (avg: 31.8) years, all caucation. They had all been gaming since mid-childhood (average age 9,6 years), for an average of 22.2 years. They were well educated (avg: 5.6 years after high school) with income in the upper ranges (avg: NOK 474 000 / \$79 000). The group included an IT systems architect, a chemical process operator, an architect, and two managers. They were all avid gamers (gaming an average of 21.4 hours per week). One of them perceived his gaming as a consuming hobby, while the others rated it as either a lifestyle or a hobby bordering on a lifestyle.

The only requirement when selecting the sample was that they were gamers, specifically of MMORPGs. The final group was recruited partially from the researcher's extended network, partially through word-of-mouth. The interviewer was also a gamer, experienced with WoW and MMORPGs in general.

### *Design*

The interviews were semi-structured, with a number of main questions designed to set the agenda of the conversation, as well as a small list of areas to be visited within each main question.

Adhering to the method of grounded theory, the interview guide evolved between interviews (Appendix B-F). That evolution was along three primary lines: Types of games focused on, the definition of "acquisition" used, and the perspective used to elicit memories.

### *Game types.*

In terms of what game types the project focused on, it started out broadly and was later narrowed down. The initial purpose was to include any game type the interviewees

happened to be playing. After only one interview, the contemporary actuality of MMORPGs influenced a shift towards that genre, adding a slight emphasis on the social aspect. Aside for the actuality issue, this shift also served to focus a study that was trying to look at too much at one time.

### *The definition of “acquisition”*

When it comes to the definition of acquisition, the project started out narrow and was later broadened. After a couple of interviews, the decision was made to open up the definition to include not only learning entirely new skills, but also improving on old ones. The reason behind that decision was the common occurrence of an interviewee reporting skills used in the game as previously learned outside the game. Deliberation led to the conclusion that relevant findings were being discarded due to the narrow definition.

### *The perspective used to elicit memories.*

The interviews used different focal points to trigger memories in the interviewee: At first the focal point was memorable game situations (e.g. “can you think of a skill used in your most memorable game situation?”), but for the later interviews it was moved towards skill categories (e.g. “do you remember a game situation where you used any communication skills?”). It was theorized that this change would lead to a modification in what skills were recalled and reported. Another focus that was used was sense of efficacy, working from the assumption that a gamer will experience a sense of efficacy whenever a skill is successfully used.

### *Questionnaires*

The interviewees were talked through a demographic form (Appendix A) that collected primarily the information noted in the “participants” paragraph, but also a few other items regarding their gaming habits (social or loner) and their attitude towards skill acquisition through gaming. The purpose of the questionnaire was to document who the

results represent, and to give an indication of whether habits and attitude have any impact on what skills were reported and how many.

### *Procedure*

The interviews were conducted over a period of ten weeks, and lasted from 1 to 2.5 hours. The interviews were recorded and transcribed, yielding an average of 19 transcribed pages. The transcription was initially exhaustive, making note of breaks and “thinking noises” (e.g. “uhm”). It was eventually decided that the nuances conveyed by such details were largely irrelevant to the research focus, and so were thenceforth ignored. Any references to skills were systematically extracted and then evaluated for whether use, improvement, acquisition or transfer was involved. The skills were then analyzed in terms of type and categorized.

### *Results*

The interviewees reported a large number of skills that they felt were acquired through their gaming activities. In this section is a list of all the skills that were reported, and a list of which of those the interviewees had benefited from in real life. Only those they could recall having benefited from personally were included. For ease of presentation the skills have been ordered in several groups, including six groups employed by the British Department for Education and Skills (DfES) to categorize transferable skills, what they call “key skills” (DfES, 2005). Additional groups were created for skills that are difficult to fit within those six categories. Table 1 shows the skills assorted by category.

As predicted, a subset of the reported skills can be said to be somehow dependent on the presence of other players, and so probably not easily found in non-MMOGs. The skills from this “social” subset are primarily to be found in the “Communication” and “Working with others” categories.

Note that some of the skills were analyzed (divided into smaller parts) during the interview, when it was unclear what exactly the skill entailed. For those that were

analyzed, their component parts are given. But those that were not are given in their original form. Even though it is probable that when you acquire a composite skill you also acquire its parts to some extent, it was considered outside the scope of the project to conduct any analyses aside from those done with the interviewees.

**Table 1:**  
*Skills Acquired in World of Warcraft*

<b>1) Communication</b>	<b>2) Application of Number</b>
-Listening -Accurate self-expression -Writing	-Arithmetics
<b>3) Using Information Technology</b>	<b>4) Working with Others</b>
-Using discussion forums and search engines -Chatting -Touch typing -Programming -Being virtual	-Adhering to ethical standards -Converting people to ethical standards -Overcoming linguistic inhibitions -Overcoming interpersonal inhibitions -Personality awareness/reading people -Heightened consciousness of frames and protocol for communication -Considering people's suitability for tasks -Cooperation -Leadership
<b>5) Improving Own Learning and Performance</b>	<b>6) Problem Solving</b>
-Ability to tolerate boring tasks -Dedication	-Goals → analysis → strategy
<b>7) Basic Cognitive Skills</b>	<b>8) Higher Order Cognitive Skills</b>
-Attention -Good overview -Quick thinking -Fast processing of sensory input -Quickly choose the proper response -Filtering relevant information	-Tactics -Predicting opponents' actions -Identifying game logic and mechanics -Pattern recognition
<b>9) Physical Skills</b>	<b>10) Other</b>
-Eye-hand coordination	-Acting/roleplaying

### *Skills Acquired Through Gaming*

Following are the skills the interviewees perceived as having acquired through their gaming activities in WoW. They are ordered by category. The numbering on the categories serves no purpose other than ease of presentation, but the first six categories correspond with the six categories for key skills used by DfES. Note that the interviewees used examples from the game which involved terms that will appear strange to the uninitiated, so called “geek-speak”. Footnotes have been included to try to explain some of those.



1) *Communication - skills related to communicating ideas, feelings, desires etc to other people.*

- *Listening:* One interviewee who was used to participating in raids<sup>2</sup> where voice communication was common, talked about the demands of monitoring audio input. From 2 to 40 gamers can theoretically connect to the same voice channel in order to be able to communicate faster than what is practical using the in-game chat function, which is via the keyboard. Maintaining focus on vocal input can be challenging in any setting, not least in one where there is so much input competing for attention. If more than one person speaks on the channel at the same time, filtering through to the information that is relevant to oneself can be problematic. To make matters worse, the game's sound effects also signal crucial events. For example, gamers can express distress, need or other things directly through their avatars instead of through chat or voice, using prerecorded, theatrical statements, provided for each combination of race and gender by the game creators.
- *Accurate self-expression:* Communication in WoW is generally done through chat (i.e. exchanging typed comments in a small window, just like instant messaging), which means that a lot of the communicational cues we are used to from real life, like body language and tone of voice, has been cut out. The room for misinterpretations is thus greatly increased, and under such circumstances it becomes truly important to express oneself accurately and clearly through the choice of words, sentence structure etc. Chat communication has become relatively commonplace in present day, and certain tools have been developed by the users to facilitate its use. This includes smileys and abbreviations. Although these tools carry the potential of enhancing the communicator's chances of making herself understood, it likewise carries the potential for creating more confusion and misunderstandings. Not everyone is familiar with the conventions,

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<sup>2</sup> A raid is groups of up to 40 people cooperating simultaneously within the same game space. The raids are also called "end-game content", considered by many the high point of the entire game. This is where the most coveted rewards and the most spectacular monsters are to be found.

- and some people are used to different conventions. In any case, accurate and precise expression had paid off for several of the interviewees of this study.
- *Writing:* This is the ability to express one's thoughts in written words, and invest effort in that expression in order to increase the chances of eliciting the desired response. World of Warcraft is social in its nature, and inherently encourages the gamer to develop their communication skills. The primary method for communication is chat, meaning writing. The gamers will experience that it is easier to get what they want from other players if they write in certain ways. One interviewee explained that the more effort you put into your writing, the better the response. He was playing a troll, a race who in World of Warcraft speaks with a heavy Jamaican accent. He learned to emulate that accent in his writing, and adopted appropriate words and phrases to complete the illusion. He experienced a marked difference in how he was received by other players depending on how much effort he invested in his "trollish". Other interviewees emphasized clarity, i.e. that the choice of words allowed for as little ambiguity as possible.

2) *Application of Number - skills related to manipulating numbers, aka mathematics.*

- *Arithmetics:* Several of the interviewees mentioned the necessity for frequent calculations in-game, both when computing for resource management and combat efficiency. Simple addition and subtraction is often used in combat, whether it be for calculating the health of ally or foe, which weapon to choose for maximum damage, how much to bid for a certain item at the auction house and still make money etc.

3) *Using Information Technology - skills related to the use of modern computer technology designed for creation, storage, exchange and utilization of information.*

- *Using discussion forums and search engines:* Most of the interviewees reported using the internet to seek out information that could help them in the game: factual information on where to locate things within the game world, details of the

various races and classes<sup>3</sup>, tactical information on how to most efficiently build<sup>4</sup> your character, fight specific character classes and much more. There are numerous forums and other resources available, both those made available by the game creators and a large number of community initiatives. Those who choose to use these online gain experience with utilizing the relevant information technology.

- *Chatting*: One interviewee also talked about the rising prominence of the computer chat as a communication tool, being used more and more in school, work and social life every day. Much of the communication in WoW is conducted in the chat window, and so gamers automatically grow in their familiarity with this tool.
- *Touch typing*: One interviewee said that World of Warcraft offered a good opportunity to practice his typing on the keyboard. The more stressful situations in WoW require fast communication while still paying close attention to the screen, making it a natural choice to type without looking at the keyboard, aka the touch method.
- *Programming*: WoW offers the option of creating macros. A macro is what in computer science is termed a “script”, meaning a string of different commands executed in the order designated by the programmer (i.e. the gamer). The programmer therefore needs to apply two skills: how to meaningfully string different abilities in the game, and how to use the programming language that the macro-system understands.
- *Being virtual*: One of the interviewees defined simply existing and functioning within a virtual reality a skill. It entails a great number of things. Exactly what depends on the virtual reality in question, but typical for today’s virtual realities is

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<sup>3</sup> When creating a player character, you choose one of a number of available races for your character. The races are not like the human races of real life, but the races of high fantasy. Examples are orc, troll, gnome etc. you also select one out of a number of classes, which is a little like the occupations of real life. Examples are warrior, wizard, priest etc. In WoW, the race is primarily of cosmetic significance, while the class determines the character’s abilities, what equipment she can use, what role it will fit in a party etc.

<sup>4</sup> “Build” refers to the composition of talents you choose for your character. The talents change your characters in some way, like providing a new ability to use in combat. In WoW, you steadily receive a talent as your character gains experience.

that you control an avatar within the uniquely defined confines of the game space. This subject is treated more thoroughly in the discussion section.

4) *Working with Others - skills related to successful interaction with other people.*

- *Adhering to ethical standards:* Several of the interviewees reported frustration over in-game encounters with individuals who were acting less than considerate towards other players. Apparently it is the younger players who tend to do this, but the social nature of WoW provides mechanisms that steer said youngsters towards acquiring helpful social skills. An example of such a mechanism is when a member of a party does not behave beneficially to the group, but instead fights in an uncoordinated fashion<sup>5</sup> and engages “ninja-looting”<sup>6</sup>. The rest of the party will usually react by berating the transgressor for the unwanted behavior, as well as suggesting (or insisting on) alternative behavior. If the initial response does nothing to change the unwanted behavior, the party might react with frustrated or rude remarks. Eventually, people who act this way will experience being thrown out of the party altogether. Normally, these uncomfortable consequences are enough to motivate people to assimilate the suggested alternative behavior, and eventually find those more gratifying. Although ethics is not usually thought of as a skill, it is certainly something that tends to make social interaction smoother and more enjoyable.
- *Converting people to ethical standards:* One of the interviewees said that his experiences with “ethically challenged” people had helped him acquire a useful set of skills: Initially he had responded to that type of behavior with mild annoyance and a helpless shrug. But by observing how certain others, who were more experienced with this sort of thing, managed to successfully influence the transgressors to adopt more productive behavior, he himself was gradually able to

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<sup>5</sup> For example, if you do not stick with the rest of the party you can accidentally aggravate monsters before the party is ready to fight them. This often lead to the entire party being wiped out.

<sup>6</sup> Usually, loot found after combat is distributed among the party-members based on need. If more than one player can use an item, who gets it is decided randomly (by the rolling of virtual dice). Those that do not need the item refrain from rolling. For example, a warrior would not roll for a wizard’s staff. If nobody needs the item, everyone rolls for it to trade it for money later. The ninja-looter ignores all standards and rolls for everything, or when it is an especially valuable item, regardless of need.

take an active role. By the time of the interview, he knew how to approach ninja-looters and their sort in a way that had a fair chance of making them more palatable to the party.

- *Overcoming linguistic inhibitions:* One interviewee had changed noticeably insofar as being able to initiate contact with strangers, specifically foreign speakers. Such contact was necessary for him to progress in the game, and that was enough motivation for him to challenge his inhibitions, and gradually conquer them.
- *Overcoming interpersonal inhibitions:* The interviewee who reported this had noticed that people of all ages, gender, educational and occupational backgrounds etc. have been found to enjoy WoW. Since operating in the same game space, they naturally interact. Because of the way the gamers' real identities are veiled behind their avatars, people are initially unaware of each other's personal characteristics, and so are unable to filter anyone out by sight alone. Thus they are exposed to the behavior of very different people than what they are used to. When they are forced to deal with those types of people in real life, it does not feel so outlandish. If the identities are actually unveiled after having played together for a while (seeing that the not so bad person underneath is from a group of people ordinarily not interacted with), perhaps preconceptions and prejudices have been whittled down to the point where they would no longer hesitate to spontaneously interact with each in real life.
- *Personality awareness/reading people:* While playing WoW the interviewees continually ran into strangers, some of whom they interacted with. In time they learned how to read them early on and predict their behavior. This is the skill of assessing another person based on any number of factors (e.g. appearance, behavior, utterances etc.), and to place that person in any number of previously defined categories. The categories are then helpful to predict the person's future behavior, as well as his desires, strengths weaknesses etc. Alongside this skill is an awareness of how that person needs to be spoken to, based on things like her social inhibitions, what protocol she's used to etc.

- *Heightened consciousness of frames and protocol for communication:* Depending on who you are, what groups you belong to, your values etc, how you react to different ways of being spoken to can be very different, and this is no less true in WoW. One interviewee felt like his awareness of this fact had evolved through his gaming. He was simply more conscious now, of the fact that the other players he encounters have different requirements and preferences for how to be approached and addressed.
- *Considering people's suitability for tasks:* One of the interviewees talked about recognizing what kind of people are suited for a given task or role, or recognizing what kind of task or role a certain person is suited for. This skill is dependant on an understanding of the characteristics of both the task and the person being considered.
- *Cooperation:* working efficiently in a team, communicating well and complementing each other's strengths and weaknesses.
- *Leadership:* the ability to get others to respect and follow you, catering to their needs while at the same time knowing how to make best use of their resources to the benefit of the group or goals. Also includes how to communicate with followers without putting them off.

*5) Improving Own Learning and Performance - skills of a more personal nature, developing oneself into a more efficient person both in terms of acquiring and applying knowledge and skills.*

- *Ability to tolerate boring tasks:* One interviewee talked about how WoW is partially comprised of boring and repetitive tasks. This was especially true for him because of his love for "alts", alternative characters. He did not really have a single character that was preferred above others. He had several primary characters, and a number of secondary characters that he liked to play with from time to time. Because of the limited number of quests in WoW, all the characters had to repeat the same ones in order to advance in level. Inventing or discovering

new motivational factors to continue playing through boring tasks thus became necessary to progress in the game.

- *Dedication:* This was not about how to be dedicated per se, but more a realization and attitude that impossible-seeming things can be accomplished with dedication and patience. Several interviewees noted how WoW favor those who invest the most time in it. One of them reported that at times he had felt that some of the achievements he had seen others accomplish seemed utterly impossible, because it would simply require too much time. After wrestling with this sense of hopelessness for a while, he decided to give it a shot anyway, and succeeded. From this he gained a strengthened sense that what seems impossible can be achieved through dedication.

*6) Problem Solving - skills related to identifying problems and designing ways to resolve them.*

- *Goals → analysis → strategy:* This is a basic approach to problem solving. Several of the interviewees mentioned this approach as a common tool for them to master the game. For example, one interviewee had been particularly active in PvP<sup>7</sup>. He explained that he had developed his character, a warlock, especially with that in mind. Specifically, his goal was to get as many player kills as possible in order to reach the top of the ranking lists for the PvP battles he partook in. He performed an analysis of the various talents, abilities and equipment available to warlocks, and identified which ones would maximize his capability to quickly eliminate other players. He then defined a suitable strategy that would optimally customize his character for his defined goal. The end result secured him a top spot on most of the relevant ranking lists. He was well aware that his character was specialized towards his one, specific goal, making him weaker in the other situations offered by the game.

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<sup>7</sup> Player versus Player, a game style where the goal is to compete against human opponents, rather than artificial intelligence (AI). There are several opportunities for PvP play in WoW, all of which involve besting other players in combat.

7) *Basic Cognitive skills - lower order skills related to the functioning of our mind.*

- *Attention:* All the interviewees mentioned attention in one way or another. There are plenty of distractions in a game like WoW: Breathtaking scenery, enemies out to kill you, the competitive distribution of loot, continuous solicitation by friends and strangers on the various chat channels, notifications from the auction house, etc. Although all of these distractions are rarely present all at the same time, not much time passes where none of them are. The demands on the gamer's ability to focus and maintain attention is therefore generally high.
- *Good overview:* A related skill mentioned by the same interviewee, which will facilitate when trying to be attentive. In order to react productively, you must know what to react to. In situations where there are potentially scores of other agents abound, keeping a semblance of overview of the situation is demanding. Knowing what information requires attention, where to find that information, and when the time is right to pay attention to it all contributes to a good overview.
- *Quick thinking:* The general ability to act fast cognitively, especially in stressful situations. Combat situations are stressful, and time is of essence. The pressure is that much more viable due to the multi-player environment: failure on your part will affect your companions negatively and (in PvP) your enemies positively. Aside for your genuine concern with your companions' well being, failure will probably invoke undesirable reactions from them, in the shape of rebuke, disappointment, bitterness etc. Success, and even survival, depends on the ability to react quickly and accurately to the demands of the situation.
- *Fast processing of sensory input:* Quickly making sense of (attaching meaning to) sensory input. All the information gathered through the senses must somehow be processed and assigned some meaning, which will sometimes immediately influence the gamer's thinking and behavior. Preferably this is taking place simultaneously with continued input of sensory impressions, as well as planning and acting based on prior information processing. In-game, if you fail to process information, the sensory impressions will quickly become an incomprehensible



- jumble. As a result you become paralyzed, or at least your actions become less than optimally adjusted to the situation.
- *Quickly choose the proper response:* Meaningful combination of current information and experience. Having put meaning to the sensory input, the next step is to use that information to derive at sensible actions. In a situation as stressful as some of those to be found in World of Warcraft, you do not have a wealth of time to ponder. Reactions must come fast, and often automatic. Some times there is no automatic response, particularly in novel situations, and other times the automatic response just does not help. In those instances, it becomes paramount to quickly mesh the parameters of the current situation with whatever helpful experiences possessed. Memory of relevant experiences must be accessed instantaneously, and the decision to pick one response over the others made in less than a heartbeat.
  - *Filtering relevant information:* Part of analysis, based on previous experience and defined goals. Both when sensing and when processing sensory input, knowing what information can be ignored or discarded before it drains too much resources provides an edge. The former can be accomplished by knowing in advance at what times to pay special attention to what parts of the screen and which sounds. The latter is possibly harder, and requires clearly defined goals, memories of prior experiences fresh in mind, and the ability to quickly recognize whether the parts fit together.

8) *Higher Order Cognitive Skills - composite skills related to the application of reasoning.*

- *Tactics:* One of the interviewee usually sought a leadership role, both when engaging in PvP battles and when partying or raiding in PvE. Although they were not discussed in more detail, the following were identified as components of tactics: Acquire and maintain an overview of the situation, predict future events, give meaningful commands to the other members of the party/raid, pre-planning ahead of entering situations, and think fast (intuitively?) when in the situation.

- *Predicting opponents' actions:* This skill is similar to “people awareness/reading people”, but also applies to computer controlled opponents. The skill is improved through experience and knowledge of the game mechanics, including knowledge of the various skills and abilities of all the classes, and familiarity with the various roles that the classes are typically assigned in groups. In the case of PvE, one can learn the characteristics of certain types of monsters, like how some types will range, others will patrol a smaller area, while yet others remain stationary. This is composite of, among other things, pattern recognition and logical deduction.
- *Identifying game logic and mechanics:* Several of the interviewees were concerned with identifying the underlying mechanics in the game in order to succeed. Social playing induces even more planning and preparations, because there is the added motivation of not screwing things up for the other players. What “underlying mechanics” means is apparently quite broad: it can be the mathematical formulae used by the game to calculate how events outside of the gamers' immediate control transpire, like whether a swing with a sword connects or not; it can be what kind of movement patterns the various creatures encountered follow; it can be what roles each character class is best suited to fill in a party; or it can in fact be any number of other things that the gamer can figure out and use to his advantage.
- *Pattern recognition:* This skill involves identifying patterns in the game environment, i.e. events that are connected, in order to make predictions that can be exploited for success within the game. Several of the interviewees mentioned this kind of pattern recognition. It includes both learning how the opponents could be expected to act (similar to “people awareness/reading people”), what types of monsters are typically aggressive, what tactics work in what situations etc. This is primarily a question of learning from observation and experience.

9) *Physical skills - skills related to using the physical body.*

- *Eye-hand coordination:* As the typical requirements of most action games, this was mentioned by several of the interviewees. It refers to the ability to time the

motion of the hands controlling the mouse and keyboard according to the requirements of the on-screen situation. It is also a question of having minute control of the relevant muscles, in order to make the motions as long, short, smooth or sudden as possible. WoW is controlled by both keyboard and mouse, and the interviewees gave several examples of in-game situations where success was dependent on a quick eye and a steady hand.

*10) Other - skills that defy categorization.*

- *Acting/roleplaying:* One interviewee emphasized this skill. WoW is a MMORPG, i.e. a massively multiplayer role-playing game. It even has its own servers that are designated “role-playing servers”, where there are community enforced rules for trying to remain in-character when in public (i.e. when “saying” out loud in the game world so that others can “hear” you. Chat channels are usually exempt from these rules). The interviewee felt that this role-playing activity improved his abilities in several ways: his ability to mentally don another personality, his ability to act, and his ability to convince others he is something he really is not.

*Acquired Skills Transferable to Real Life*

The interviewees felt that some of the skills were unquestionably transferable to real life. For those skills they gave examples from real life in which they used them. Those examples are listed below. The categories have retained their numbers from the previous section.

*1) Communication - skills related to communicating ideas, feelings, desires etc to other people.*

- *Listening:* One interviewee reported having improved at picking up useful information in a job situation. The raid situation, for example, required him to

practice filtering through to the information that was relevant to him, and that practice was put to use at work as well.

*3) Using Information technology - skills related to the use of modern computer technology designed for creation, storage, exchange and utilization of information.*

- *Using chat, discussion forums, and search engines:* The pair of interviewees who reported using these in connection with WoW, were also using them elsewhere, particularly at work.
- *Touch typing:* One interviewee reported using touch typing daily, both at work and in other situations. The practice he got through gaming made him feel more competent.

*4) Working with others - skills related to successful interaction with other people.*

- *Overcoming linguistic inhibitions:* The interviewee who reported this told about his travels to foreign countries, and how he had previously experienced it as very uncomfortable initiating conversations with strangers. In Norway, he claimed to have no such inhibitions - they only applied when approaching foreign speakers. At the time of the interview, however, he felt much more comfortable initiating such conversations, because his experience in WoW had shown him that those situations seldom had as much real threat to them as he felt beforehand.
- *Heightened consciousness of frames and protocol for communication:* The interviewee who reported this skill felt that his elevated awareness contributed slightly to his approaching individuals in real life in a more appropriate manner.
- *Considering people's suitability for tasks:* When in the role of party or raid leader, you often assign tasks and roles to the group members depending on their abilities and personalities. An interviewee felt that a slightly heightened sensitivity to people's skills had come from his gaming. However, he emphasized that WoW represents a simplified version of the real world, where the number of factors to

take into account is much higher. However, that simplicity might in fact make it a suitable place for beginners to practice their skills.

*5) Improving Own Learning and Performance - skills of a more personal nature, developing oneself into a more efficient person both in terms of acquiring and applying knowledge and skills.*

- *Dedication:* One interviewee felt strongly about having consolidated a certain value or conviction that is quite useful in all areas in life: the conviction that although things may seem impossible, or near enough to make it not worth its while to try for, dedication can accomplish just about anything. If you set your heart on something, and put your mind to it, you can achieve it, bit by bit. It is very well illustrated by the old word of wisdom, “How do you eat an entire elephant? Bit by bit”. This fact is not something that is found at the forefront of everyone’s mind, and although this interviewee reported having it to some extent before WoW, his trials and successes in that game had made it that much clearer. That sense of efficacy is something that carried over to other aspects of his life.

*7) Basic Cognitive skills - lower order skills related to the functioning of our mind.*

- *Fast processing and quick response:* This was reported by an interviewee who maintained that these skills were what gave him his edge at work. He used them daily when managing a large number of co-workers, making sense of all the input they gave him and acting on them without preparation. In WoW he had ample opportunity to practice these skills, particularly when in raid situations with up to 39 other people. Another interviewee emphasized quick thinking. He argued that the complex and social combat situations in WoW requires very quick thinking. That quick thinking had become more or less habitual, meaning that he experienced an ability for quick thinking in real life situations which he attributed in part to his “mental exercises” in WoW.

## Discussion

Gee argued that the skills acquired in games are transferable between the various in-game situations, with a strong implication that some of those are transferable to real life as well (Gee, 2003, 2005). It is difficult to contradict the claim that one has to acquire certain in-game skills in order to progress in that game. The alternative would have to be that gamers progress haphazardly through the various challenges presented, without really picking up any of the skills intended (or unintended) by the game designer. Clearly, that is not the case. If it were, gaming would be no fun at all, and engaging in them would be about as enjoyable as playing tennis using a racquet without strings. But are the acquired skills transferable to real life?

This study extended Gee's research by examining a genre that he did not: MMOGs. The first research question concerned what skills we can expect to acquire through MMO gaming. The interviews revealed several skills of a variety of types. It had been predicted that the multiplayer aspect of MMOGs would lead to more social skills than the games treated by Gee, and this was also found to be the case. In fact, the largest category of skills was "Working with others". The second research question was to what extent any of the acquired skills as transferable to real life. The participants of this study gave concrete examples of situations in their own real life where such skills were put to use.

### *The Sample*

Since this was a qualitative study, little effort was invested in creating a scientifically justifiable sample. Few participants and a degree of convenience sampling both mean that the study is weak as far as the traditional measures of generalization and validity are concerned. The interviewees share similar socioeconomic and educational background, and they are all male. Although with my sample I got wordy and reflected responses, others might report less skill acquisition. Perhaps a reflected attitude is paramount to acquisition. Perhaps the participant group included people who have a particularly learning oriented approach to the world in general (always looking to gain

something useful from even the most frivolous activity), which might be lacking in the average gamer. It is also possible that different types of people might for example put more emphasis on physical skills than on cognitive skills, and thus both acquire and report different skills than the participants of this study. The small and selective sample makes it likely that the list of skills reported is far from exhaustive, nor necessarily a good selection of the skills available. However, they turned out quite a few skills, and gave a fair indication of what type of skills are dominant in MMOGs. They also showed that gamers at least have a sense of their acquired skills being useful in real life.

The gender homogeneity poses another limitation. There are many women who play WoW, but unfortunately none of those are represented in this study. Women have different outlook than men on several things, and might have reported very different skills. A gender difference might also have become apparent in readiness to transfer skills between settings.

### *The Role of Attitude*

Four out of the five interviewees were positive to the possibility of acquiring useful skills through gaming. Those four all reported a large number of skills acquired. The interviewee who was negative hardly reported any at all. This could be because he actually had not acquired any, or it could be because he had never thought the issue over before (less reflected?). It could also be that he did not consider any of the skills acquired useful, and so felt hesitant to report them. This was one of the first interviews, when the definition used for “acquire” was still something like “learn an entirely new skill”, and that might have stopped him from reporting skills he felt like he had really acquired prior to playing WoW. Interestingly, he was characterized by a generally negative attitude towards gaming, similar to the one adopted by many outspoken critics of gaming. He seemed to “admit” that gaming was really a waste of time, not useful for anything other than entertainment, that it isolated him socially etc. This generally negative outlook might be a reason why he had not thought of potential gains from gaming. It is also interesting to note that throughout the interview, he did after all come up with one skill that he found to be of use in real life, and that skill was of a social nature.

*The Question of Transferability*

The transferability of skills from an in-game setting to other settings has been subjected to very little psychological research. This is even more so true for gaming. Until further research can establish the degree of transferability, we are left with our own assumptions and the statements of gamers. Intuitively, it feels natural to assume that when you acquire a piece of knowledge, understanding or skill, it remains within you for you to benefit from whenever needed. However, we know that there are many factors that can inhibit the use of these resources. For example, some knowledge is so entrenched in the context it was acquired in that the mind is unable to easily generalize it to other contexts, and this is likely true for skills as well. For example, if a person is brilliant at tactics when in command of two warriors, a priest, a mage and a rogue, knowing exactly how to take maximum advantage of that party when facing a group of flesh eating zombies and ghosts, that does not mean that he is automatically capable of leading a team of vice presidents in a struggle to reach an accord for merging two corporations. He might be so used to relying on fireballs and the brandishing of swords that he forgets any of the more general principles of tactics that might be applicable. However, I am tempted to assume that the potential for transferability is always present, and that it comes down to the presence of various inhibitors and facilitators whether a certain person is able to successfully transfer a certain skill from one particular context to another or not. Therefore, although the result section has a deceptively short list of transferable skills it is arguable that all the skills in the acquired-list are potentially transferable as well.

Even if that premise is not accepted, there are other factors suggesting that the list could have been longer. The interviewees seemed to discount skills that were not similar enough to something concrete they do in real life, and this ruled out some of the more general skills. For example, both basic cognitive skills and problem solving skills are general enough so that most people use them in one situation or other in their day-to-day activities. Also, there were a number of skills that they saw as transferable, even though they could not think of a specific situation in which they themselves have used them. In fact, nearly all the skills listed as acquirable were also perceived as transferable by one or



more interviewees. But again, the list only includes those that were explicitly stated by at least one interviewee that he himself had used in daily life. Finally, as previously mentioned, in the initial interviews the definition used for “acquire” was like “learn an entirely new skill”. For some of the skills reported to exist in the game, it became clear that the interviewees felt like they themselves already possessed the skill in question from before using it in the game. Therefore, even though acquirable in the game, the skill was not acquired by them personally, and therefore not reported as acquired through gaming. In later interviews, improving skills were also seen as within the realm of acquisition. Had this broader definition been in the early interviews, perhaps more transferable skills might have been perceived as acquired through gaming.

### *Are the Boundaries Good Enough?*

As the reader is likely to have noticed, both “skill” and “acquire” have been allowed rather loose definitions in this study. One of the problems associated with that is the potential difficulty differentiating between skills that are actually acquired in the game, and skills that are simply used. One of the interviewees suggested the supposition that “practice makes perfect” – as you practice a skill, you improve in it. When that supposition was adopted by the project, every last skill used in the game suddenly became acquired as well. This is certainly not above criticism - even the interviewees themselves did not always feel they had improved in a reported skill. It is interesting to note, though, that even those skills were usually deemed acquirable for someone less competent. As it was, only the last interview was affected by this, but perhaps it would be unadvisable to employ such open definitions in future research, at least until the supposition has been tested scientifically specifically for skills acquired through gaming.

In this project, it was allowed that skills could have been acquired outside of a game situation, as long as it happened in connection with the gaming. Whether that can be justified is debatable. Some of the IT skills for example, are not acquired through the actual gaming exercise but rather as a bi-product of it. Unlike many of the in-game situations, using the forums and search engines etc. are entirely optional, and according to many, activities apart from the actual gaming. This is an relevant point, and the reason

these skills have been included anyway is related to the previously mentioned notion that gaming does not occur in a social and cultural vacuum (Gee, 2003). A part of the impact games have on gamers is through the interaction with culture and other people that is spawned by the gaming. In this case, the utilization of information technology was spawned by the gaming, and therefore acknowledged as acquired through gaming. This decision is admittedly ripe for criticism and debate.

### *The Acquisition of Negative Skills*

Can gaming have a negative effect on skills as well? Perhaps they can. For example, it seems that some people actually regress in communication skills, relying too much on abbreviations and smileys when chatting. As was pointed out by some of the interviewees, the stressful combat situations require fast communication, which encourages embracing the conventions for using smileys and abbreviations that have blossomed both in MMOGs and in regular chat. One might fail to pick up other, more constructive ways of expressing oneself efficiently, making it a net negative effect. Conceivably this habit can carry over from the game, impeding the person's ability to make himself understood in real life. For some opinions on this topic, see these commentaries by Anderson and Brockenbrough (N. Anderson, 2006; Brockenbrough).

### *Acquiring the Skill of "Being Virtual"*

One of the interviewees shared his observations and visions regarding the future of virtual reality. He remarked on how some organizations are already replacing video and phone conferences with meetings in virtual realities, and he expects this technological meeting place to continue conquering more ground in our everyday lives. WoW is one of the most populous commercial virtual realities on the market today, but far from the only one. Several virtual realities have a very different nature from WoW, like Entropia Universe (EU). In EU, you spend and earn real money developing your avatar, acquiring belongings, developing skills, having a career etc. As far as alternative realities go, it more closely resembles our real lives than WoW does. It shows the

direction of the development in this area: fairly ordinary people enter EU in order to simulate a different life, whether it is purely for recreation, as a flight from a miserable real life, or entirely different reasons. In the future, we might find ourselves conducting ordinary, day to day affairs in virtual realities, just like some people have business meetings in them today. Perhaps we will be traversing internet stores with an avatar, interacting with salespeople avatars. Education might certainly be partially moved into virtual space, not to mention therapy. If all this comes to pass, parts of our lives will revolve around being virtual. But this expression of “being virtual”, what does it entail? It is hard to say, and it probably differs quite a bit from virtual reality to virtual reality. But some aspects are recurring. For example, the sensory input is quite different from real life, as it is currently limited to a 3D image on a screen and whatever sound effects are included in the package. Dealing with people is different too, because most people are “shielded” by their avatar – they are much less accountable for their actions, they can construe a different personality than their real one (even change it from moment to moment if they so desire), and they can log out of the world at any moment. There are likely many psychological effects from these unfamiliar parameters. Adapting to and coping with these differences can be seen as a skill, something you can be more or less competent with. So, as the interviewee pointed out: The gaming taking place in MMOGs today might be preparing people for the life of tomorrow.

### *The Potential Rewards*

The findings in this study should suggest to the computer game industry that there are issues here they must consider carefully, for ethical as well as business reasons. If we accept Gee’s claim that people have a craving for learning (Gee, 2005), and that games that cater to that craving become particularly successful commercially, then it follows that the industry should invest effort into creating games that offer gamers more and better learning experiences and opportunities for skill acquisition. Such an investment would also pay off in the grand ethical scheme of things. Games are most likely here to stay, so why not try to make the consequences from playing them clearly positive to both gamer and society? Imagine if every person who “logged into” a game for an hour or

two, even if it was just for fun, “logged out” a stronger, happier and more adaptable person. According to this study, gamers do acquire skills from gaming – so consider this a nudge to the industry.

### *Future Research*

Further research on this subject is recommended, as gaming is one of the most popular activities we have today. In spite of the immense popularity it enjoys, the media attention is primarily on the negative aspects, like addiction or consequent anti-social behavior. Although research on those aspects are important, there are more positive sides to be explored as well, like this of meaningful skill acquisition. This project has only found that gamers have a sense of experiencing such acquisition. It needs to be confirmed through more scientifically rigorous projects whether or not what they feel is truly happening, alongside what skills are most likely to be successfully acquired this way. Future projects might also establish what factors facilitate or hinder the process: what types of people are more or less likely to acquire skills in this fashion, and what characteristics do they possess? Does gender matter? How can games be made into even more efficient learning machines?

It would also be prudent to scientifically test the supposition that games that are good learning machines are likely to enjoy commercial success. Special attention should be paid to games which leave the gamer with an enhanced repertoire of skills. If that can be established as a fact, it should have a major impact on what the games of the future will look like.

### **Conclusion**

This study examined what skills are acquired through MMO gaming. Skills were reported within all the categories that the British department for education and skills employ when talking about transferable skills, as well as some that were better defined as cognitive or physical. It was also asked to what extent those are transferable to real life, and the interviewees reported a number of examples from real life where they used some

of the gaming-acquired skills. A large part of the skills reported were of a social nature, which is considered a consequence of the social nature of MMOGs.

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## Appendix A

**Demografiske data:**

Navn:	
Kjønn:	
Alder:	
Yrke:	
Antall år med utdanning:	
Sivilstand:	
Barn:	
Inntektskategori:	
Penger brukt på spill:	
Spillt dataspill siden alder:	
Antall timer spillt/uka:	
Genre spillt (identitet):	
Ferdighetsnivå:	
Hobby eller syssel:	
Konkurrerende aktiviteter:	
Sosial/alene, guild:	
Er ferdigheter overførbare fra spill til virkelighet?	



Appendix B

**Interview guide, 1ed.**

- 1) Recall a typical (the last, best) gaming situation.

Avoid imposing a primer/filter on the participant. Mentioning skills at this point might constrain the freedom of thought. It is also a soft opener to the interview that the participant is likely to succeed at, thus allowing a sense of mastery from the get-go.

- 2) Recall instances where an in-game situation led to you acquiring (a) skill(s).
- 3) Recall instances in real life where such skills were applicable.

At this point I would present my perspectives on skills. They include the various definitions of skills, both classic and modern, as well as the models for acquisition presented by Dreyfus and Anderson.

- 4) Recall skills acquired through gaming. Describe what kind of skills they are.
- 5) Try to imagine situations in real life where these skills are applicable.

Appendix C

**Intevjuguide, 2ed.**

- 1) Hva liker du ved ditt spill?
  - a) Hva får deg til å spille (motivasjon)?
  - b) Hvordan vil du rate deg selv i forhold til andre spillere?
  - c) Hva er du spesialist på?
- 2) Fortell om din siste minneverdige opplevelse i spillet.
  - a) Fortell om bevegelsene (kontrollen)
  - b) Andre spillere?
  - c) Tanker, følelser
  - d) Planer, planlegging
  - e) Identitet
- 3) Husker du din første opplevelse i spillet?
  - a) Fortell om bevegelsene (kontrollen)
  - b) Andre spillere?
  - c) Planer, planlegging
  - d) Tanker, følelser
  - e) Identitet
- 4) Kompetansenivå
  - a) Hva har forandret seg mellom de to opplevelsene?
  - b) Mestringsfølelse?
  - c) Hvilke ferdigheter har muliggjort mestringsfølelsen?
- 5) Situasjoner i det virkelige liv der de (ferdighetene) er nyttige.
  - a) Yrkes-/studentlivet
  - b) Sosiale situasjoner, familie/venner
  - c) På et personlig nivå
  - d) **Tenkt** situasjon hvor ferdighetene kan nyttegjøres

Appendix D

**Intevjuguide, 3ed.**

**1) Hva liker du ved ditt spill?**

- a) Hva får deg til å spille (motivasjon)?
- b) Hvordan vil du rangere deg selv i forhold til andre spillere?
- c) Hva er din spesialitet?

**2) Husker du din første opplevelse i spillet?**

- b) Andre spillere, hva gjorde de, hvordan forholdt du deg til dem?
- c) Tanker, følelser
- d) Planlegging
- e) Identitet

**3) Fortell om din siste minneverdige opplevelse i spillet.**

- b) Andre spillere?
- c) Tanker, følelser
- d) Planlegging
- e) Identitet

**4) Kompetansenivå**

- a) Hva har forandret seg mellom de to opplevelsene?
- b) Mestringsfølelse?
- c) Hvilke ferdigheter har muliggjort mestringsfølelsen?

**5) Situasjoner i det virkelige liv der de (ferdighetene) er nyttige.**

- a) Yrkes-/studentlivet
- b) Sosiale situasjoner, familie/venner
- c) På et personlig nivå
- d) **Tenkt** situasjon hvor ferdighetene kan nyttegjøres

Appendix E

**Intevjuguide, 4ed.**

**1) Hva liker du ved ditt spill?**

- a) Hva får deg til å spille (motivasjon)?
- b) Hvordan vil du rangere deg selv i forhold til andre spillere?
- c) Hva er din spesialitet?

**2) Når får du en følelse av mestring?**

**3) Hva må du være god på for å få til det?**

**4) Har du opplevd en kompetansehevning på det området?**

**5) Situasjoner i det virkelige liv der de (ferdighetene) er nyttige.**

- a) Yrkes-/studentlivet
- b) Sosiale situasjoner, familie/venner
- c) På et personlig nivå
- d) **Tenkt** situasjon hvor ferdighetene kan nyttegjøres

Appendix F

**Intevjuguide, 5ed.**

**1) Hva liker du ved ditt spill?**

- a) Hva får deg til å spille (motivasjon)?
- b) Hvordan vil du rangere deg selv i forhold til andre spillere?
- c) Hva er din spesialitet?
- d) Hva måtte du bli god på for å lykkes med det?

**2) hvilke grunnleggende ferdigheter kreves i spillet?**

**3) Kategorier av overførbare ferdigheter: tilegnet eller forbedret?**

- kommunikasjon
- regneferdigheter
- informasjonsteknologi
- jobbe med andre
- forbedre ens egen læring og ytelse
- problemløsning

**4) Situasjoner i det virkelige liv der de (ferdighetene) er nyttige.**

- a) Yrkes-/studentlivet
- b) Sosiale situasjoner, familie/venner
- c) På et personlig nivå
- d) **Tenkt** situasjon hvor ferdighetene kan nyttegjøres